

# swimming upstream

Upper Colorado River Endangered Fish Recovery Program

## “Year of the Fish”: Raising razorback suckers in our classroom

—by Emily Bergum, Marissa Curtis,  
Amy Gelatt and Lauren Slagel,  
students in Mrs. Atwood’s fifth-grade class  
at Scenic Elementary in Grand Junction, Colo.

### The Fish Arrive

Our first thought about raising fish was, “We’re going to be raising what?” We were one of 10 lucky classrooms to raise the endangered razorback sucker. It was part of a recovery program to help save native Colorado River species.

On the day the fish arrived, we were all jumping in anticipation, waiting for our new class pets to arrive. “How big are they going to be?”,

“What do they look like?” and “How long are we going to have them?” were some of the many questions buzzing around our classroom.

At last, the day we had all been waiting for was finally here. August 30 was the day Stan Johnson, the education coordinator for the Colorado Division of Wildlife, delivered our 12 tiny fish. We all huddled around the tank as Stan took the fish from a water-filled plastic bag and placed them into our tank, one by one. He stayed and talked with us about the nitrogen cycle and how to take good care of our razorbacks. And so began the year of the fish.

### Learning about Razorbacks

After the fish arrived in the room, our class had more to do than we thought. That same week we started research. We learned that razorbacks live on the bottom of the river where they eat zooplankton, bugs and river bottom ooze off the rocks and mud. The hump on their back helps them stay on the bottom of the river when the current pushes against it. They usually live in water 3 feet deep, and they mate at the age of 3 or 4. They can live longer than 40 years. These are some cool fish!

To learn more about the fish and the environment they live in, our class went on some field trips. Our first was to a bird-banding station that was close to the Colorado River. We went to the river and took water samples so we could test the pH, ammonia and nitrite levels. The water wasn’t much different from our classroom tank.

Another trip was to the fish hatchery. Stan and a U.S. Fish and Wildlife Service employee gave us a tour. Not only did we see razorbacks, but we also saw Colorado pikeminnow. That day we saw more than 60,000 fish! Wow!

### Razorback Care and Feeding

Each week a new “tank team” took care of the fish. The tank team had various jobs to do and each was just as important as the others. Each person in the team had a certain job. Everyone really liked testing the pH and recording the data for the class on the overhead projector. When we tested ammonia and nitrites, we went

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## Students help restore populations of ancient fish

Colorado students are helping to restore populations of ancient fish through a unique education program sponsored by the Colorado Division of Wildlife (CDOW). Since 2000, elementary and high school classes in western Colorado have raised endangered razorback sucker or Colorado pikeminnow in classroom aquariums during the school year and released them into the river each spring.

“This is a fabulous program,” said fifth-grade teacher Cary Atwood from Scenic Elementary in Grand Junction, Colo. “Having razorback suckers in our classroom greatly increased my students’ interest in learning about endan-

gered species, the river system and water quality. They also assumed the responsibility for feeding the fish, testing their water and monitoring their growth. My students definitely developed a greater understanding of how people have affected the delicate balance of native and nonnative species in the river system.”

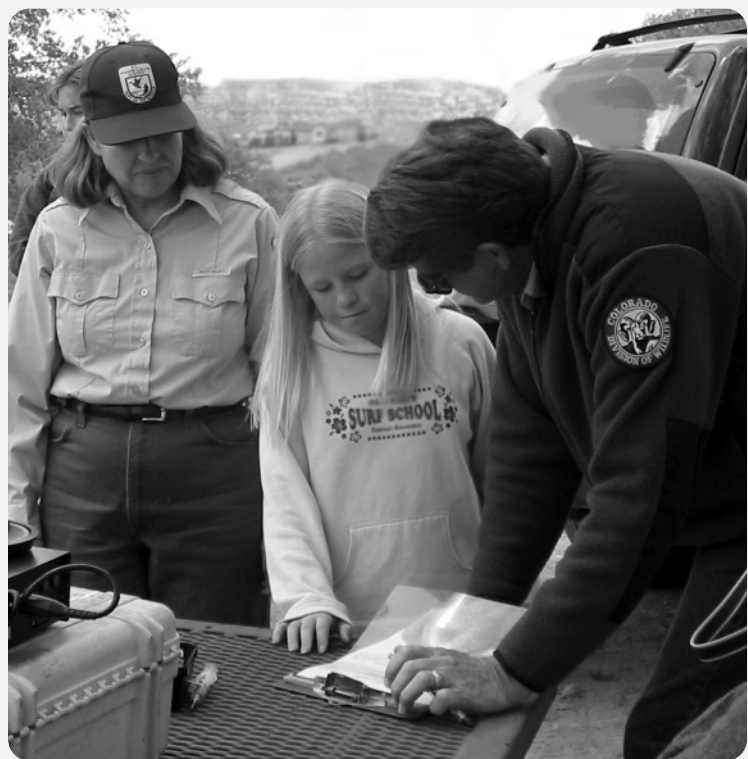
At the start of each school year, CDOW Education Specialist Stan Johnson brings the aquarium and fish to each classroom and provides instruction to the stu-

dents. At over 6 feet tall, he towers above the students as he explains that when they are taking care of the endangered fish, “they are no longer students . . . they are young scientists.” With that said, these young scientists understand what they are doing is serious business.

“There are very few of these fish left,” Stan tells the students. “You have an important job to do. You need to take care of these fish so they’ll grow large enough to survive in the river when we release them in the spring.”

Cary believes the hands-on experience of raising endangered fish instills in her students a greater sense of how their decisions can affect the world they live in. “It’s more than just learning to test water quality and to take care of a living being,” she says. “My students learn that the decisions they make about their environment can have consequences. I think they have gained knowledge from their year with the razorbacks that will remain with them for the rest of their lives.”

**Editor’s note:** The Recovery Program appreciates CDOW’s efforts to raise awareness of its work to recover the endangered fishes. The Recovery Program supports this program by providing fish from its hatchery near Grand Junction. Starting this fall, the Recovery Program also will share aquarium expenses. For more information, contact Stan Johnson, at 970-255-6191, stan.johnson@state.co.us.



FISH AND WILDLIFE SERVICE BIOLOGIST PATTY SCHRADER GELATT AND HER DAUGHTER, AMY, LISTEN ATTENTIVELY AS COLORADO DIVISION OF WILDLIFE EDUCATION COORDINATOR STAN JOHNSON EXPLAINS HOW TO RECORD MEASUREMENTS OF THE RAZORBACK SUCKER THAT AMY AND HER CLASSMATES WILL RELEASE TO THE RIVER.

TOM CANA, RECOVERY PROGRAM

CARY ATWOOD, SCENIC ELEMENTARY

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# Nonnative fish threaten survival of endangered fishes

More than 40 nonnative fish species can be found in the Upper Colorado River Basin, compared with 14 native fish species. Negative interactions with certain warmwater nonnative fish species have contributed to declines in endangered and other native fish populations. Some nonnative fish prey upon endangered and other native fishes — eating their eggs and young, and in some cases, larger fish. Nonnative fish also compete with native fish for food and space.

This year, the Upper Colorado River Endangered Fish Recovery Program expanded efforts to identify management actions to minimize or remove the threat of nonnative fishes to survival of the endangered fishes. Recently completed recovery goals require that this occur before the U.S. Fish and Wildlife Service can consider changing the status of these species from “endangered” to “threatened” and eventually to

“delisting” them (removing them from protection under the federal Endangered Species Act).

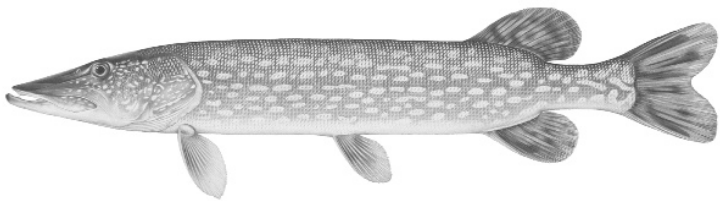
From late April through October this year, Recovery Program biologists worked in sections of 438 miles of river in Colorado and Utah to remove three species of nonnative fishes: channel catfish, northern pike and smallmouth bass. They targeted these species because scientific evidence suggests they pose a significant threat to the endangered fishes.

Where appropriate and practical, biologists relocated fish removed from the river to local ponds and reservoirs that are publicly accessible to anglers.



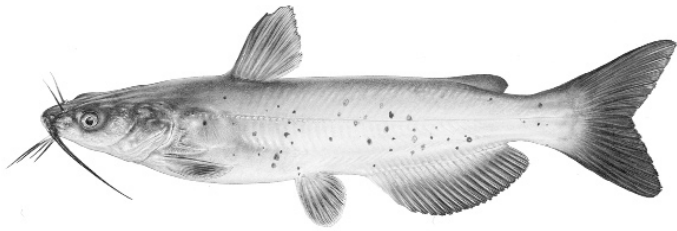
RECOVERY PROGRAM BIOLOGISTS USE ELECTROFISHING TO CAPTURE TARGETED NONNATIVE FISH SPECIES IN RIVERS IN COLORADO AND UTAH.

## Targeted Nonnative Fish Species



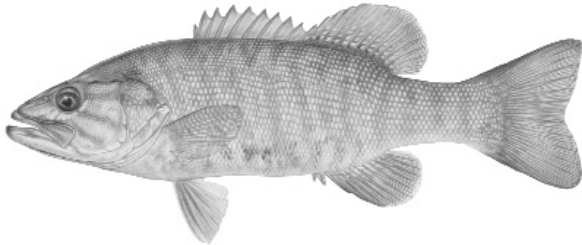
### Northern Pike (*Esox lucius*)

Northern pike are common locally in reaches of the Yampa and Middle Green rivers. The northern pike is a long-bodied fish with a duckbill snout and mouth filled with sharp teeth. This species is an aggressive predator subsisting primarily on fish. Larger northern pike are known to include waterfowl in their diet. Individuals generally reach 28 inches in length and can live up to 24 years. Researchers have captured northern pike up to 44 inches long in the Yampa River. Northern pike spawn as soon as ice breaks up in the spring.



### Channel Catfish (*Ictalurus punctatus*)

The channel catfish is the second largest member of the catfish family in North America. They are common to abundant throughout much of the Upper Colorado River Basin where they are known to live up to 22 years. This species is easily identifiable by its barbels (whiskers), deeply forked tail and sporadic black spotting. Its sizeable body is sleek, and a broad, flat head dwarfs its lower jaw. In the upper basin, channel catfish are generally 20 inches or less in length; however, researchers have captured individuals up to 35 inches in the Yampa River. Channel catfish spawn between early spring and summer. They use taste buds in their sensitive barbels to locate prey. Major foods are aquatic insects, crayfish, algae and fish.



### Smallmouth Bass (*Micropterus dolomieu*)

Smallmouth bass belong to the sunfish family. They are common locally in reaches of the Yampa and Middle Green rivers. Smallmouth bass are distinguished by three or four dark “tiger stripes” that extend from the eye toward the tail. The eye is typically red or orange. Unlike its cousin, the largemouth bass, its upper jawbone does not extend beyond the eye. Smallmouth bass may reach 22 inches in length and live 10 years. They spawn in the spring. Smallmouth bass eat a variety of aquatic insects, crayfish and fish.

Recovery Program researchers will meet in December to evaluate this year’s data and determine future nonnative fish management efforts.

As efforts proceed to identify and reduce the threat of nonnative fishes, the Recovery Program is working with the states of Colorado and Utah to adhere to state laws and regulations.

“It is not our intent to eliminate every nonnative fish in the Colorado River system,” said Recovery Program Nonnative Fish Coordinator Pat Nelson. “Rather, our goal is to attain and maintain fish communities where populations of the endangered and other native fish species can persist and thrive and the recovery goals for the endangered fishes can be achieved.”

### Other Management Actions

Other nonnative fish management efforts conducted or supported by the Recovery Program include screening reservoir outlets, berming ponds to prevent nonnative fishes from escaping into the rivers, developing agreements to regulate stocking of nonnative fishes, and changing state bag and possession limits.



BIOLOGISTS CAPTURED A NORTHERN PIKE IN THE YAMPA RIVER THAT HAD THE TAIL OF A PARTIALLY-EATEN COLORADO PIKEMINNOW PROTRUDING FROM ITS MOUTH. NORTHERN PIKE AND OTHER NONNATIVE FISH SPECIES HAVE REPLACED THE COLORADO PIKEMINNOW AS THE RIVER'S TOP PREDATOR.

In 1999, the Recovery Program installed a fish screen at Highline Lake in western Colorado to prevent nonnative fishes stocked in the lake from escaping into the river where they might interact with endangered fishes. This screen has allowed Colorado to stock the lake with sport fish because it prevents negative interaction with the endangered fishes. Similarly, a screen placed last year at the Ute Tribe’s newly constructed Elders Pond in northeast Utah enabled the Tribe to stock the pond with sportfish.

The Recovery Program also has worked with the states of Colorado and Utah to revise nonnative fish stocking plans to stop the introduction of problematic nonnative fishes into habitats occupied by the endangered fishes. In addition, the State of Colorado has removed bag/possession limits on the targeted species in the entire Yampa River and in critical habitat in the Colorado, Gunnison and White rivers.

### Helping Other Native Fish Species

Biologists believe that nonnative fish management actions taken to benefit the endangered fishes also will benefit other native fish species such as the roundtail chub, bluehead and flannelmouth sucker, and speckled dace.

“Our data suggest the abundant gamefish like northern pike, smallmouth bass and channel catfish are eating most of the young fish produced each year,” said Colorado Division of Wildlife Native Fish Conservation Program Manager Tom Nesler. “This will result in declining adult populations of native fish species over time. Northern pike have begun to prey upon Colorado pikeminnow in the Yampa River due to the scarcity of fish prey. By working proactively to maintain balance in the river system, it is hoped that all native species will continue to thrive and never require state or federal protection as threatened or endangered.”

For more information, contact Pat Nelson, 303-969-7322, ext. 226, [pat\\_nelson@fws.gov](mailto:pat_nelson@fws.gov).

# Osmundson named outstanding researcher of the year

U.S. Fish and Wildlife Service Fishery Biologist Doug Osmundson is the Upper Colorado River Endangered Fish Recovery Program's Outstanding Researcher of the Year.



RESEARCHER OF THE YEAR DOUG OSMUNDSON SAMPLES THE RIVERBED FOR AQUATIC INSECTS AND OTHER INVERTEBRATES.

“Doug is a person of conviction who believes in his work,” said last year’s recipient, Rich Valdez, who presented the award. “He has contributed tremendously to the body of knowledge about the Colorado River and the endangered fish. He provided us with the first reliable population estimate of Colorado pikeminnow and has set the standard for population estimates of the endangered fishes. Doug epitomizes the dedication of biologists who work with the Recovery Program.”

Doug has researched endangered fishes in the Colorado and Gunnison rivers near Grand Junction, Colo., for 20 years. He first came to the

area in 1983 as a graduate student from Utah State University to work on a thesis project involving largemouth bass predation on young Colorado pikeminnow. After earning his master’s degree in aquatic ecology, he returned to work full time for the Service. He is now one of the foremost authorities on the Colorado pikeminnow.

“Doug has published some important literature about the Colorado pikeminnow and river ecology and developed some of the first flow recommendations for the endangered fishes in the upper basin,” said Service Biologist Chuck McAda.

Doug was lead author of a scientific paper published in *Ecological Applications* in 2002 which describes how reductions in spring runoff result in increased sedimentation of the riverbed, which in turn reduces pro-

duction of aquatic insects. Native fishes rely on these insects for food, and the Colorado pikeminnow, the river’s top predator, rely on these fish for their food. By limiting insect and fish production, sedimentation ultimately affects the number of Colorado pikeminnow the river can support.

His recent work has allowed him to work with experts in other fields.

“As a scientist, it is important to not only capitalize on your strengths, but also to recognize your areas of weakness, and be willing to fill those voids by reaching out and collaborating with others,” Doug said. “The final product is really strengthened by collaborative efforts. Probably the most rewarding and educational aspect of my career has been the

opportunity to work with other scientists.”

Doug said he is honored to be recognized by his peers. “I appreciate that other people have noticed and recognized my efforts. If I have had some measure of success, it attests to the fact that even someone of very average intelligence can make a worthwhile contribution. One needs only to be willing to work hard, remain motivated, and above all, be persistent.”

The Recovery Program presents this award each year to an individual who has demonstrated a long-standing commitment to the recovery of the endangered fishes and who has made significant contributions to understanding their biology and environmental needs. ◀

## Larval fish lab celebrates 25 years

Colorado State University’s Larval Fish Laboratory (LFL) celebrates its 25th anniversary this year. Established in 1978, the LFL is unique among North American fishery research laboratories, focusing its expertise on reproduction and ecology of early-life-history stages of rare native fish species, including the endangered Colorado River fishes.

Led by Director Kevin Bestgen, LFL researchers collaborate with local, state and federal agencies, other universities and nongovernmental organizations responsible for aquatic resource management. Most activities are concentrated in the Upper Colorado River Basin. LFL research has contributed to understanding the natural history and ecology of native fishes in Colorado and the West, which has facilitated efforts to conserve them.

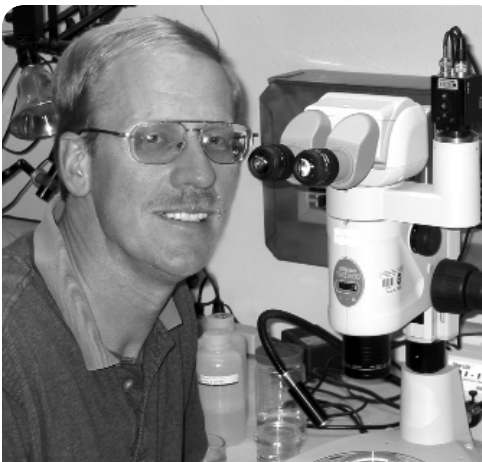
“Much of what we know about the ecology of fishes in the upper basin and many of the Recovery Program’s management and monitoring activities for the endangered fishes are based on data from the lab’s research,” said Recovery Program Director Bob Muth. “The lab provides information that is essential to our ability to recover these fishes.”

Some of the more significant LFL research topics that have contributed toward recovery of endangered fishes include:

- Understanding early-life-history stages of the fishes including how to identify them, what they eat and the kind of habitat they need.
- Monitoring the fishes to understand where they live, their abundance and any changes in their status in response to recovery management actions.
- Assessing changes to the river system that result from operation of major dams and how those changes may affect the fishes. LFL scientists participate on interdisciplinary teams responsible for re-operation of these dams for management and recovery of the fishes.
- Identifying electrofishing techniques that will not harm the fishes.
- Studying water quality and habitat needs of the fishes.
- Evaluating effects of removing nonnative, predator fishes.

Located on the Colorado State University campus in Fort Collins, Colo., the LFL’s remodeled facility houses a depository for preserved fish eggs, larvae and early juveniles collected from various North American locations. The LFL collection consists of an estimated 80,000 lots of fish, nearly 4 million specimens, most of which are in early-life stages. The LFL also maintains an extensive literature collection.

Reports are available at [www.cnr.colostate.edu/lfl](http://www.cnr.colostate.edu/lfl). For more information about the lab, contact Kevin Bestgen, 970-491-1848, [kbestgen@cnr.colostate.edu](mailto:kbestgen@cnr.colostate.edu).



LARVAL FISH LAB DIRECTOR KEVIN BESTGEN AND HIS COLLEAGUES ARE LEADING EXPERTS IN THE EARLY-LIFE HISTORY STAGES OF RARE NATIVE FISH SPECIES.

## Recovery Program honors U.S. Fish and Wildlife Service hydrologist

There’s no question about it — fish need water to survive. For the past 21 years, U.S. Fish and Wildlife Service Hydrologist George Smith has worked to ensure that endangered Colorado River fishes have river flows necessary to support their recovery. What might seem simple is quite complex, especially in the West where water is more valuable than nearly any other natural resource.

“George takes research results and plays the high-stakes game of Western water poker to ensure that the identified flow needs of endangered fishes are met to the fullest extent possible,” said Recovery Program Director Bob Muth who presented George with a special award at the 2003 annual upper basin researcher’s meeting for his significant accomplishments toward recovery of the endangered fishes.

“George’s ability to view an issue from all sides, combined with the outstanding working relationships he’s established with water users, helped the Recovery Program weather the worst drought in recent history,” Bob said. “I doubt that the endangered fishes would have fared as well as they did without his daily — and sometimes even hourly — attention to river flow conditions, as well as the relationships he’s developed with other water users that resulted in their willingness to work with the program to share the limited water resources.”

After earning a master’s degree in Natural Resource Administration from Colorado State University in Fort Collins, George worked on water-quality and land-use planning issues for the Northwest Colorado Council of Governments. He joined



HYDROLOGIST GEORGE SMITH ASSISTED IN DEVELOPMENT OF THE GRAND VALLEY CHECK STRUCTURES WHICH HAVE ALLOWED WATER USERS TO MAKE MORE EFFICIENT USE OF LIMITED WATER RESOURCES. “SAVED” WATER IS AVAILABLE TO INCREASE RIVER FLOWS FOR THE ENDANGERED FISH.

the Service in 1981 to work on issues related to energy development. In 1982, he began to work on water issues related to endangered fishes in the Upper Colorado River Basin. He has worked closely with officials representing state, local and federal agencies, and private water developers.

When the Recovery Program was established in 1988, George assumed the responsibility of working with the Recovery Program’s Water Acquisition Committee to make sure the fish had sufficient water. Since 1989, when water from Ruedi Reservoir was set aside for endangered fish recovery, George has managed water releases for endangered fish from upper basin reservoirs. He has worked on studies for significant water projects that the Recovery Program has put in place including flow recommendations for all of the major rivers in the upper basin, and water-delivery contracts for Ruedi Reservoir, Steamboat Lake,

Redlands Fish Passage, Grand Valley Water Management and the Orchard Mesa Check Settlement.

“Receiving this award for my work during the drought is a highlight of my career, along with traveling to Washington, D.C., to brief congressional staff about how the Service and the Recovery Program coped with the record drought of 2003,” George said. “I am honored to be recognized for my work and it was rewarding to be able to tell congressionals that we managed to survive the drought because of the cooperative relationships we have developed over the years with other water users in the basin.” ◀

Learn more about the Recovery Program. Visit us online at [ColoradoRiverRecovery.fws.gov](http://ColoradoRiverRecovery.fws.gov).



# Classroom experience leads youth to pursue hatchery job, biology degree

Kellen Keisling met his first razorback sucker during a science class at Page High School in Utah. Kellen and his classmates helped raise this rare fish species which is found in the Colorado River system and nowhere else in the world.

Students worked with biologists from the Utah Division of Wildlife Resources' (UDWR) Wahweap Fish Hatchery to raise endangered razorback sucker in public golf course ponds. They fed, weighed and measured the fish and recorded research data. They also tagged the fish and released them into the Colorado River as part of efforts to restore populations of fish that can reproduce in the wild.

Now in its eighth year, this unique, award-winning science course is a partnership among the school, UDWR, the City of Page, and the Upper Colorado River Endangered Fish Recovery Program.

The experience led Kellen to pursue his dream of becoming a biologist. He just completed his fourth summer working for the UDWR. His duties have included working at the Wahweap Fish Hatchery where he helped raise sportfish such as tiger muskie,



KELLEN KEISLING SHOWS OFF AN ENDANGERED BONYTAIL HE HELPED RAISE AT THE UTAH DIVISION OF WILDLIFE RESOURCE'S WAHWEAP FISH HATCHERY.

smallmouth bass and wiper to stock in Utah lakes. Occasionally he also helped raise native fish including razorback sucker, bonytail, woundfin and June sucker.

Kellen, 20, is a junior at Mesa State College in Grand Junction, Colo., where his major is biology.

"It's awesome," he said, referring to working for UDWR. "I've had the opportunity to confirm now that this is the career I want rather than wait until I graduate from college to see if I would like it. I'm getting a head start on getting work experience in my chosen field. The things I learned at the hatchery help me when we study about them at school." 🐟

## "Year of the Fish" continued from page 1

through the same process as the pH test, except we had to wait 20 minutes before the color of the vial told the truth about the water quality.

Sometimes the ammonia, nitrites or pH levels were too high or too low and we had to do special things about that. The tank team also had to replace evaporated water and change the tank filters. Even though we changed the filters weekly, they were often very grimy. When we showed the filters to the class, everyone said, "Eewwww!"

When the tank team fed the fish, they also measured the water temperature and counted the fish. We raised 12 fish all year. Sadly, the week before we released them, one of the smallest died.

### Releasing the Fish

As the day came for us to say farewell to the fish, we were filled with anxiety and sadness. On May 5, our class walked down to the Colorado River State Park at Connected Lakes near our school.

Stan gathered us around, made an opening speech and asked us what we learned throughout the year. "These fish are fragile" and "We learned to be more responsible" were two of the many responses of our classmates.

Soon Stan organized us into teams and showed us the jobs we needed to do to release our razorbacks.



TANNER BOLLACKER AND HIS FIFTH-GRADE CLASSMATES RELEASED 11 YOUNG RAZORBACK SUCKER INTO THE COLORADO RIVER. THE STUDENTS RAISED THE ENDANGERED FISH IN THEIR CLASSROOM THROUGHOUT THE SCHOOL YEAR.

The first job was scanning the pit tag. Once the scanner came up with the number, the recorder logged the nine-digit number. The scanner then handed the tiny pit tag to the disinfectant, who inserted the pit tag into a needle and cleaned it.

Once Stan got a good grip on a fish, he would take the needle and inject the pit tag in the fish's belly. When this was done, he would hand the fish to "Michael Jackson." This was the measuring job. "Michael Jackson" wore white gloves and handled the fish carefully, measuring it in inches, then converting it into centimeters for the recorder.

Each tagged fish was placed into a clear bucket of river water, carried down to the riverbank and released. Many "good-byes" and "Have a great life" and "Live long and prosper" were said that day to our departing fish.

On the bus ride home, there was talk of who had measured the biggest fish and what it looked like. Raising the razorbacks was something that really changed our fifth-grade year and made it a great memory. 🐟

Editor's note: Amy Gelatt is the daughter of U.S. Fish and Wildlife Service Biologist Patty Schrader Gelatt. Patty has been involved with recovery of the endangered fishes for 20 years.

# Recovery Program news and updates



### Bonytail uses fish ladder for first time

This summer, a hatchery-raised and stocked bonytail used the fish ladder at the Redlands Diversion Dam on the Gunnison River near Grand Junction, Colo., for the first time.

When the 350-foot-long ladder was completed in 1996, biologists weren't sure endangered fish would use it. Colorado pikeminnow was the first species to enter the ladder. In 2001, razorback sucker also began to use it. The bonytail confirms that the ladder is successfully helping endangered fish reach 50 miles of historic habitat in the Gunnison River blocked when the dam was built in 1905.

Data collected since 1996 shows that 60 Colorado pikeminnow, six razorback sucker, one bonytail, more than 53,000 other native fish and approximately 7,600 nonnative fish have used the ladder. 🐟



### Ruedi 2012 agreement signed

The Colorado Water Conservation Board signed a nine-year agreement with the U.S. Bureau of Reclamation (Bureau) and the U.S. Fish and Wildlife Service in June to ensure that 10,825 acre-feet-per-year of water is available from Ruedi Reservoir to augment river flows in the 15-Mile Reach of the Colorado River from Palisade to the confluence of the Gunnison River near Grand Junction, Colo.

The Bureau will pay the capital costs of the water (\$735,000 per year plus interest). The Recovery Program will pay the annual operating and maintenance costs — currently about \$62,000 per year.

Additional water made available for the endangered fish also will improve conditions for anglers and rafters. For more information, contact George Smith, 303-236-4485, george\_smith@fws.gov. 🐟



### Contract awarded to build passage facility

Kissner G.C., Inc., of Cedaredge, Colo., is the recipient of a \$4.5 million contract with the U.S. Bureau of Reclamation to construct a concrete-lined passage facility for endangered and other fish at the Grand Valley Project Diversion Dam on the Colorado River in Debeque Canyon. Completion is scheduled for July 2004.

The fish passage will give the endangered Colorado pikeminnow, razorback sucker and bonytail access to critical habitat blocked since the 14-foot-high diversion dam was completed in 1917. This habitat is needed to establish self-sustaining populations of the endangered fishes. It also will benefit other native fish species.

For more information, contact Justyn Hock at 970-248-0625, jhock@uc.usbr.gov. 🐟



### Water festival educates fifth-grade students

Nearly 15,000 fifth-graders and their parents and teachers in Grand Junction, Colo., and nearby communities have learned about a broad array of water issues during the past 10 years at a Children's Water Festival, sponsored each May by Ute Water, Clifton Water, the City of Grand Junction and the Town of Palisade. Representatives from local businesses and government agencies staff 41 learning stations on topics such as the use of water for farming and irrigation, to fight fires, to generate power, to drink and to support plants, animals and fish in the Colorado River system.

"We look forward to this event each year," said U.S. Fish and Wildlife Service Biologist Barb Osmundson. "It's a hands-on teaching experience, and it's the first time some students have ever seen a fish up close and personal." 🐟

## swimming upstream



### Upper Colorado River Endangered Fish Recovery Program

*Swimming Upstream* is a publication of the Upper Colorado River Endangered Fish Recovery Program. The Recovery Program is a cooperative program involving federal and state agencies, environmental groups and water and power-user organizations in Colorado, Utah and Wyoming. Its purpose is to recover endangered fish while water development proceeds in accordance with federal and state laws and interstate compacts. The four endangered fish species are humpback chub, bonytail, Colorado pikeminnow and razorback sucker.

Robert T. Muth  
Program Director

Debra B. Felker  
Editor

**Program Partners**  
Colorado River Energy Distributors Association  
Colorado Water Congress  
National Park Service  
State of Colorado  
State of Utah  
State of Wyoming  
The Nature Conservancy  
U.S. Bureau of Reclamation  
U.S. Fish and Wildlife Service  
Utah Water Users Association  
Western Area Power Administration  
Western Resource Advocates  
Wyoming Water Association

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# Program director’s message

By Bob Muth

“Recovery is based on reduction or removal of threats and improvement of the status of a species . . . .” “Recovery is achieved when management actions and associated tasks have been implemented and/or completed to allow genetically and demographically viable, self-sustaining populations to thrive under minimal ongoing management and investment of resources.”



RECOVERY PROGRAM DIRECTOR BOB MUTH (LEFT) TALKS WITH FACILITY MANAGER DAVE SCHNOOR DURING A VISIT TO THE J.W. MUMMA NATIVE AQUATIC SPECIES RESTORATION FACILITY NEAR ALAMOSA, COLO. THE STATE-OPERATED FACILITY IS RAISING BONYTAIL, RAZORBACK SUCKER AND COLORADO PIKEMINNOW TO SUPPORT STOCKING PLANS FOR BOTH THE UPPER COLORADO RIVER AND SAN JUAN RIVER RECOVERY PROGRAMS.

These quotes from the *Humpback Chub, Bonytail, Colorado Pikeminnow, and Razorback Sucker Recovery Goals* (U.S. Fish and Wildlife Service, August 1, 2002) illustrate the challenge accepted by the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) when it was established in 1988 and by the San Juan River Basin Recovery Implementation Program in 1992. To meet this challenge, the fundamental elements of these two programs are directed at developing and implementing management actions to achieve recovery. The recovery goals for the endangered fish underscore the fact that achieving recovery is an endeavor that must be pursued in both the upper and lower Colorado River basins. The basin-wide recovery goals identify site-specific management actions to minimize or remove threats and specify the numbers of fish that comprise self-sustaining populations.

Progress toward meeting the recovery criteria within the estimated time lines for downlisting and delisting is measured at the species level. This requires active participation and

cooperation by federal, state, tribal and private stakeholders from throughout the Basin to develop and implement effective management actions. I am encouraged by the positive steps taken within the past year to establish lines of communication and to begin planning and integration of appropriate management strategies in the lower basin. Much more needs to be done, but I believe we are headed in the right direction.

After 15 years, the Recovery Program continues to be a national model of a cost-effective, collaborative effort to recover endangered species while managing water to serve human needs. The Recovery Program’s success attests to the dedication and tireless efforts of its partners. It is my privilege to share with you some of the most significant accomplishments of the past year:

- Final flow recommendations were completed to benefit endangered fishes in the Gunnison, upper Colorado and Duchesne rivers.
- The final report was approved for the *Coordinated Facilities Operations Study*, initiated in 1999 to investigate and recommend alternatives to supply up to an additional 20,000 acre-feet of water to the 15-Mile Reach on the upper Colorado River.
- A 10-year agreement was signed by the Colorado Water Conservation Board, U.S. Bureau of Reclamation and U.S. Fish and Wildlife Service to annually deliver 10,825 acre-feet of water from Ruedi Reservoir for base-flow augmentation in the 15-Mile Reach.
- A strategic plan was completed to prioritize and direct future habitat research and monitoring activities. Recommendations will be used to develop studies beginning in 2004.
- A floodplain habitat model was completed that will be a useful tool to identify razorback sucker habitat requirements and develop floodplain habitat management plans. Completion of management plans for the Green River and upper Colorado River subbasins is expected by the end of the year.
- An easement was obtained on 451 acres of floodplain habitat on Thunder Ranch near Jensen, Utah. Restoration of a 330-acre wetland that will serve as a nursery habitat for young razorback sucker is expected to greatly benefit recovery of the species.
- An integrated upper basin stocking plan was completed for the endangered fishes in Colorado and Utah. Recaptures of stocked razorback sucker and bonytail and documentation of razorback sucker reproduction through collection of larvae in the Gunnison River demonstrate that stocking efforts are working.
- New efforts began this spring to manage nonnative northern pike, smallmouth bass and channel catfish in reaches of the Yampa, Green, and upper Colorado rivers. Parallel to these efforts was the development and implementation of a strategic communication plan to gain public understanding and support for nonnative fish management actions.
- By year’s end, a final environmental assessment and programmatic biological opinion are expected to be completed for the *Management Plan for Endangered Fishes in the Yampa River Basin*. Upon completion, the Fish and Wildlife Service will enter a cooperative agreement with the Colorado River Water Conservation District and the States of Colorado and Wyoming to implement the plan.

The road to recovery is not a high-speed freeway and not without tight turns and steep hills — but it is a well-mapped course, nevertheless, that will take us to our destination. There is more to accomplish and difficult tasks ahead, but I am confident that by working together we will achieve our common goal. My thanks to all of you who support our efforts and contribute to recovery in so many ways.

*Robert T. Muth*

# Program acquires and restores prime razorback sucker nursery habitat

In a move that biologists hope will spur recovery of the endangered razorback sucker in the Green River subbasin, the Recovery Program recently obtained an easement on 451 acres of floodplain habitat on Thunder Ranch near Jensen in northeastern Utah. This easement includes a 330-acre wetland depression that will be connected to the Green River next year to allow razorback sucker larvae to drift into it during spring runoff. The wetland provides an environment of calm, productive, warm water that will enable the larvae to grow to about 14 inches before they move back into the river’s main channel to join the adult population. Habitats like this may also play a role in bonytail recovery.

The wetland is five miles downstream from a major razorback sucker spawning area and will become the first suitable nursery habitat that drifting razorback sucker larvae encounter. Scientists believe that the closer the nursery habitat is to a spawning area, the more likely it is that large numbers of drifting larvae will live long enough to reach it. The next available nursery habitat that is accessible to drifting larvae is another 16 miles downstream.

“Acquisition and restoration of this wetland will greatly benefit recovery of the razorback sucker,” said Frank Pfeifer, project leader, U.S. Fish and Wildlife Service. “I am pleased with the cooperation and support we received from the owner of Thunder Ranch and look forward to a continued good working relationship.”

The Recovery Program also is working to restore endangered fish habitat in other parts of the upper basin, including the Colorado and Gunnison rivers. A 23.4-acre easement recently was acquired on the Colorado River upstream from Grand Junction,

Colo. This property is part of a diverse habitat area that is used extensively by Colorado pikeminnow and razorback sucker. The plan for this area is to create nursery habitat for young razorback sucker and Colorado pikeminnow and to enhance habitat for Colorado pikeminnow. Next year, levees will be lowered in strategic locations to provide access to floodplain wetlands for the endangered fish.

Downstream from Grand Junction, the Recovery Program acquired a 25.7-acre easement from the Grand Valley Audubon Society. This is another site where a levee will be notched next year to create an additional razorback sucker nursery.

Adjacent to the Gunnison River near Whitewater, Colo., construction to lower levees recently was completed on a gravel pit the Recovery Program acquired. This area may become the primary nursery habitat for populations of razorback sucker being reestablished in the Gunnison River.

“These types of habitats are extremely rare in the Upper Colorado River Basin,” said Recovery Program Habitat Coordinator Pat Nelson. “In these types of environments, larvae are able to survive and grow until they are ready to leave for the river. Without such habitats, it is unlikely that we will be able to recover the razorback sucker because larvae apparently aren’t surviving in the main channel habitats.

“Prior to water development and levee construction, endangered fishes had access to floodplain habitats. Lowering levees will restore access to these important habitats for the endangered fish.”

For more information on these and other habitat projects, contact Pat Nelson, 303-969-7322, ext. 226, [pat\\_nelson@fws.gov](mailto:pat_nelson@fws.gov).



A U.S. BUREAU OF RECLAMATION-PROVO CONSTRUCTION CREW WORKS TO RECONNECT RAZORBACK SUCKER NURSERY HABITAT TO THE GUNNISON RIVER IN WESTERN COLORADO.



# Delicate balance of cooperation and coordination provides water when and where it’s needed

To most people, a weather forecast provides information to help them decide what to do or what to wear on any particular day. To Colorado Division of Water Resources Engineer Judy Sappington, weather forecasts are crucial to her ability to determine the amount of water available in rivers and mountain reservoirs to serve a complex variety of needs. These needs include delivery of water for crop irrigation, city water systems, power production, recreation and recovery of endangered Colorado River fishes.

Water is limited in the arid state of Colorado and demands for it are high, especially during the past several years of extreme drought. Deciding who gets the water and when is not easy. A Managing Entities Group was formed in 1996 to address the timing and distribution of water in accordance with Colorado water law. The Green Mountain Reservoir Historical Users Pool (HUP) is one reservoir used to



COLORADO DIVISION OF WATER RESOURCES ENGINEER JUDY SAPPINGTON PLAYS AN IMPORTANT ROLE IN HELPING TO ENSURE THAT WATER FROM RIVERS AND MOUNTAIN RESERVOIRS IS DELIVERED WHEN AND WHERE IT’S NEEDED IN ACCORDANCE WITH COLORADO WATER LAW.

supplement various needs. Other reservoirs include Dillon, Williams Fork, Wolford and Ruedi.

Each week, from late-June through early November, Judy helps coordinate a conference call to discuss river conditions and water delivery needs. Participants include the seven members that comprise the Managing Entities Group: Colorado Division of

Water Resources Division 5 Engineer, Colorado Water Conservation Board, Grand Valley Irrigation Company, Grand Valley Water Users Association, Orchard Mesa Irrigation District, the U.S. Bureau of Reclamation and the U.S. Fish and Wildlife Service. Managers representing other state, federal and private water management agencies also join the call.

“These other participants offer valuable input to the overall operation of the Colorado River with the common goal of meeting the water needs of the Upper Colorado River Basin water users,” said Dick Proctor, manager of the Grand Valley Water Users Association, one of the largest irrigation companies in the Grand Valley.

Before each call, Judy checks daily and weekly weather forecasts. She studies computer-generated data from river gauges to determine how much water is available in the mainstem Colorado River and its tributaries. She also compiles and reviews reports to identify the amount of water in reservoir storage facilities.

Judy relays this information to conference call participants and asks if their water needs are being met or if they have any particular concerns for the upcoming week. Based on their input, Judy discusses changes with reservoir operators to adjust dam releases that week to ensure the requested water is delivered on time.

Judy’s office in Glenwood Springs maintains water entitlement records for more than 2,000 Colorado water users. When HUP participants request water releases, Judy documents this information to ensure their water rights are upheld under Colorado law.

To determine how much and when water should be released from a dam, Judy considers the time it will take for water to reach the intended downstream destination which could

be as long as two or three days. She also accounts for water lost during transport from factors such as evaporation.

This year, the Bureau of Reclamation, the Denver Water Board and the Colorado River Water Conservation District maintained storage pools totaling 27,500 acre-feet of water to benefit the endangered fishes. This amount of water varies each year depending on water conditions in the Upper Colorado River Basin.

As the person designated to manage this water for the Recovery Program, U.S. Fish and Wildlife Service Hydrologist George Smith checks river flows daily during the summer and early fall and talks with the biologists who conduct onsite recovery work.

During a conference call on July 9, George expressed concern that if river flows continued to drop dramatically as a result of the drought, there would not be enough water for the endangered fish in the 15-Mile Reach of the Colorado River from Palisade to the confluence of the Gunnison River near Grand Junction, Colo. He asked that 200 cubic-feet-per-second (cfs) of water designated for the fish (fish water) be released by the following Friday if river conditions did not improve.

“The past few years, it’s been hard to know how much water to ask for,” George said. “There is only a certain amount of fish water in 2003 and when that water’s gone, there isn’t anymore. Based on the 200 cfs rate, this water would last 70 days. If the severe drought continued, it could mean no water for the fish by the end of September. We’re gambling that there will be some rain or early snow-fall to carry us through until winter.”

Also during the call, Dick Proctor said he may need water that week to meet his customers’ irrigation needs. Judy noted that if Dick requested water at the same time as the Recovery

Program, she would need to notify dam operators a few days ahead to make sure the water was delivered on time.

As the agency in charge of federal reservoirs, the Bureau plays an important role in operating the reservoirs to meet water requests while at the same time addressing water conservation issues. All HUP participants keep a watchful eye on the river and consider how water releases might impact those who enjoy the river for recreational uses such as rafting and fishing. This can be quite complex and sometimes difficult.

“We have to be aware that releasing certain volumes of water at one time might result in flows that are unsuitable for anglers and endangered fish,” Judy said. “Yet those might be the very flows that are preferred by river rafters. We also have to factor in the ability to maintain certain water storage levels in the reservoirs. All of these and other factors must be considered when we make our decisions.”

The cooperative nature of the weekly HUP call improves communication and allows water managers to help make decisions about water distribution.

“Since it was formed, the HUP has created an open process for delivering water that enables everyone’s voice to be heard,” said Brent Uilenberg, technical services division manager, Bureau of Reclamation, who has participated in this process since 1996. “The group tries to work out a compromise that takes everyone’s needs into consideration.”

For more information, contact George Smith at 303-236-4485, [george\\_smith@fws.gov](mailto:george_smith@fws.gov); or Judy Sappington at 970-945-5665, ext. 17, [judy.sappington@state.co.us](mailto:judy.sappington@state.co.us). ◀

Editor’s note: A similar process is in place for water releases from Flaming Gorge Dam on the Green River in Utah and Navajo Dam on the San Juan River in New Mexico.

## In memory

Mike Baker, hatchery manager for the Upper Colorado River Endangered Fish Recovery Program’s Grand Valley Endangered Fish Facility near Grand Junction, Colo., died July 3, after a brave battle with cancer. Mike joined the hatchery staff in 1992. His expertise in fish pond culture enhanced the Recovery Program’s efforts to raise endangered razorback sucker.

Mike developed an elaborate mating scheme to maintain the highest genetic diversity for the razorback sucker to be stocked into the Colorado and Gunnison rivers. He monitored the growth and stocking of razorback sucker from 98 acres of ponds throughout the Grand Valley. The Recovery Program attributes much of the success of razorback sucker propagation in the Upper Colorado River Basin to Mike’s efforts.

Mike’s career with the U.S. Fish and Wildlife Service spanned 39 years. In addition to his contributions to the Recovery Program, he worked in Spearfish, S.D.; Valley City, N.D.; and Great Falls, Mont.

Mike was a good friend and a man who could always be counted on. He is greatly missed. ▶

MIKE BAKER, U.S. FISH AND WILDLIFE SERVICE



## Upper Colorado River Endangered Fish Recovery Program

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